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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,538	08/05/2003	John Campbell Woodard	DUMMER4.1C1C1	6048

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EXAMINER
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MANUEL, GEORGE C

ART UNIT	PAPER NUMBER
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3762

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/634,538

Applicant(s)

WOODARD ET AL.

Examiner

George Manuel

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-18 and 20-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-7, 15-18 and 20-33 is/are rejected.
- 7) ☒ Claim(s) 8-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the elements of claim 19 that has been cancelled.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 2-7, 15, 21, 22, 25, 27-33 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Nakazeki et al '357.

Nakazeki et al disclose a hydrodynamically suspended impeller 22. The housing shown in Fig. 11B provides a stator assembly. Permanent magnet 24 is in impeller 22 and permanent magnet 14 in rotor 12 supports the radial direction and driving of impeller 22. Fig. 14A shows the blades 224 and 225 supported in a somewhat conical position.

Applicant's remarks that Nakazeki et al does not disclose a hydrodynamically suspended impeller 22 appears contrary to the teachings of Nakazeki et al. See col. 4, lines 17-24. Further, the fluid viscosity changes the characteristics of the magnetically suspended type pump. The feature of magnetic suspension does not preclude hydrodynamic suspension. Also, see coll. 5, lines 5-22. More specifically, if fluid viscosity C changes, displacement of impeller 22 caused by disturbance also varies, and therefore, viscosity can be obtained from the impeller displacement.

Claims 24 and 26 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Khanwilkar et al '180.

Khanwilkar et al disclose a hydrodynamically suspended impeller 21 and a three phase brushless DC motor 40.

Applicant's remarks contend there is no hydrodynamic bearing attached to the impeller disclosed in the Khanwilkar et al reference. Claims 24 and 26 do not claim a hydrodynamic bearing limitation.

With respect to claim 26, Fig. 6B shows a stator 80 wherein a portion is aligned at generally 45 degrees to an axis of rotation of the impeller. Further, a stator that is generally parallel to the axis of rotation of an impeller does not preclude a portion being aligned at generally 45 degrees to an axis of rotation of the impeller.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khanwilkar et al '180 in view Nose et al '730.

Khanwilkar et al '180 show all of the claimed features except for a ceramic housing and coating using a biocompatible film.

Nose et al teach:

"With regard to the pivots 104 and 105 and the pivot bearings 106 and 107, it is desirable that both the pivots and the pivot bearings are made of a ceramic. However, it is also within the scope of the present invention that either the pivots or the pivot bearings are made of a ceramic and the others are made of metal, such as a titanium alloy, for example. Further, it is also an alternative to have the pivots or the pivot bearings made of metal but coated with a ceramic on the surface of the metal." See col. 8, line 66 to col. 9, line 24.

Further, "since silicon carbide contains carbon, it is superior in sliding performance. For these reasons, silicon carbide is best suited." See col. 7, lines 12-42.

Using the teaching of Nose et al one of ordinary skill in the art would have found it obvious to form the housing of Khanwilkar et al of ceramic and coat it using a biocompatible film.

Regarding Applicant's remarks that Khanwilkar nor Nose discloses a hydrodynamically suspended impeller or hydrodynamic bearings attached to the impeller is incorrect. The feature of magnetic suspension not precluding hydrodynamic suspension applies also to the Khanwilkar et al reference. See col. 5, lines 7-28.

"Permanent magnets without some form of additional support cannot entirely suspend

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an object, such as an impeller, but require additional adjustable support or force in some axis to achieve stabilized suspension.” It is clear from the disclosure that one of ordinary skill in the art would have found it obvious that the fluid being pumped by impeller 21 provides hydrodynamic suspension to the impeller that requires fine positioning by using the electric activation coils. Claims 16-18 and 23 do not contain a limitation of hydrodynamic bearings attached to the impeller.

***Allowable Subject Matter***

Claims 8-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

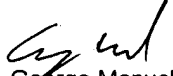
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Manuel whose telephone number is (703) 308-2118.

  
George Manuel  
Primary Examiner  
Art Unit: 3762

3/29/05